1. An input or output optical coupler device for transmitting photons between an optical source or detector and the brain or other suitable part of the body, comprising an array of optical fibers with end portions freely protruding as cantilevers from a support in the manner of bristles from a hairbrush, the end regions of the fibers sized and distributed to penetrate freely extending hair on the head or other surface of a subject to make optical contact directly over an array of points with the surface of the scalp or skin below the free hair.

2. An examination device associated with a source and detector in which a set of fibers according to claim 1 transmits light to the scalp from the source, and a set of such fibers receives light from the scalp at known distance from the source fibers for transmission to the detector.

3. The device of claims 1 or 2 in which the fibers or protective devices over the fibers have smooth, enlarged tips that comfortably engage the skin or scalp.

4. The device of any of the foregoing claims in which a peripheral element at the ends of at least some of the fibers is arranged to engage the tissue to block transfer of light along the skin.

5. The device of any of the preceding claims associated with diffuser means at the fiber ends.

6. The device of any of the foregoing claims associated with means for directing light into the fiber.

7. The devic of any of the preceding claims in which the fibers are single mode fibers.

8. The device of any of the foregoing claims in which the fibers are resiliently flexible laterally to bend and conform the pattern of fiber tips to variations in the shape of the skull, breast or other portion of the body.

9. The device of any of the foregoing claims in which the freely extending end portions of the fibers have a length to diameter ratio of between about 5 and 200.

10. The device of claim 9 in which the ratio is between about 20 and 150.

11. The device of claim 10 in which the ratio is between about 50 and 125.

12. The device of any of the preceding claims in which the free end portions of the optical fibers have diameter of the order of 0.1 to 3.0 millimeter and have a length between about 0.5 to 3 cm.

13. The device of claim 12 in which the free end portions of the optical fibers have diameter of about 0.2 to 0.5 millimeter and length between about 1 and 2.5 cm.

14. The coupler device of any of the preceding claims, constructed as a handheld probe, and being sized and configured to be moved and placed against the front, sides and top of the head.

15. The coupler d vice f any of the preceding claims, construct d as a handheld prob , and being sized and configured to be moved and placed against the breast.

16. The coupler device of any of the preceding claims in which the fibers are disposed in a predetermined array, each fiber or small grouping of the fibers being associated with a discrete detector so that fiber tips simultaneously engage an area of the subject sufficient to provide data that enables processing to provide a back projection image

17. The coupler device of claim 16 arranged and connected to image the brain.

18. The coupler device of claim 16 arranged and connected to image the breast.

19. One or a number of coupler devices according to any of the foregoing claims, as part of a helmet or brassier, the fibers being arranged to simultaneously engage different sides of the portion of the subject being examined.

20. An optical coupler in the form of a conformable brush comprised of freely extending optical fiber end portions arranged to engage the skin.

21. The optical coupler of claim 20 sized and configured to be applied to the breast or breasts.

22. The optical coupler of claim 20 sized and configured to be applied to the arm or leg.

23. The optical coupler of claim 20 sized and configured to be applied to the testicle or t sticles.

24. A hematoma detector, hematoma monitor, tumor detector, spectrophotometric imager or metabolic condition monitor comprising one or more of the optical coupler devices according to any of the foregoing claims.

25. A disposable protective element comprising an end cup or sleeve disposably surrounding a freely protruding optical fiber and constructed to permit optical access between the end of the fiber and a subject.

26. An array of disposable protective elements according to claim 26 disposed on a corresponding array of optical fibers, including finbers of optical coupler devices according to any of the preceding claims.

27. A dispenser constructed to apply the foregoing disposable elements to free end portions of corresponding optical fibers.

28. The dispenser of claim 27 in which multiple end caps or sleeves are held in alignment by the dispenser in position to be entered by corresponding fibers by juxtaposition of said dispenser with a support from which the fibers can emerge.

29. The disposable element of claim 25 or 26 in which an end region of the cup or sleeve carries a contrast medium.

30. The disposable element of claim 29 in which the contrast medium is adapt d to provide contrast for

examination by a modality other than light passing through the fibers.

31. The disposable element of claim 30 in which the contrast medium is selected to provide contrast for magnetic resonance imaging.

32. The disposable element of claim 30 in which the contrast medium is selected to provide contrast for acoustic imaging.

33. The disposable element of any of the claims 29-32 in which the contrast medium is in a sphere, microsphere or other container.

34. The disposable element of any of the claims 29-32 in which the contrast medium is a ring extending at least partially about the fiber.

35. The device of any of claim 1 including a ferrule which extends beyond the end of the freely extending fiber portion and is arranged to engage the tissue to prevent transfer of light along the surface of the engaged tissue.

36. The device of claim 35 wherein the ferrule is flexible and constructed to conform to the tissue.

37. The device of claim 35 or 35 wherein peripheral portions of the ferrule are comprised of light absorber.

38. The device of claim 1 wherein end portions f the fibers are enlarged to provide comfort to the subj ct.

39. Th device of claim 1 wherein a lens is provided at the end of an optical fiber for gathering light that has passed through tissue.

40. The device of claim 39 wherein the fiber is single mode fiber.

41. The device of claim 1-39 wherein the end of the fiber is comprised of substance to diffuse light.

42. The device of claim 41 wherein the substance comprises titanium dioxide paint or coating or the like applied to the end of the fiber.

43. A brush-form optical coupler according to any of the foregoing claims in combination with another coupler of like kind, the couplers arranged to engage laterally symmetrical portions of the body, one to provide a reference for the other.

44. The coupler of claim 43 including a lateral comparator connected to the optical couplers.

45. The optical coupling of any of the foregoing claims in combination with a plastic reference member molded to the contour of the subject.

46. A method of examination of subjects including an optical coupler according to any of the foregoing claims directed toward optical couplers.